Volunteer Lake Assessment Program Individual Lake Reports

SUNSET LAKE, ALTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	3,598	**Max. Depth (m):**	23.7	**Flushing Rate (yr^{-1}):**	1.7
Surface Area (Ac.):	205	**Mean Depth (m):**	5.6	**P Retention Coef:**	0.55
Shore Length (m):	5,600	**Volume (m^3):**	4,651,000	**Elevation (ft):**	808

TROPHIC CLASSIFICATION

Year	Trophic class
2000	OLIGOTROPHIC
2008	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

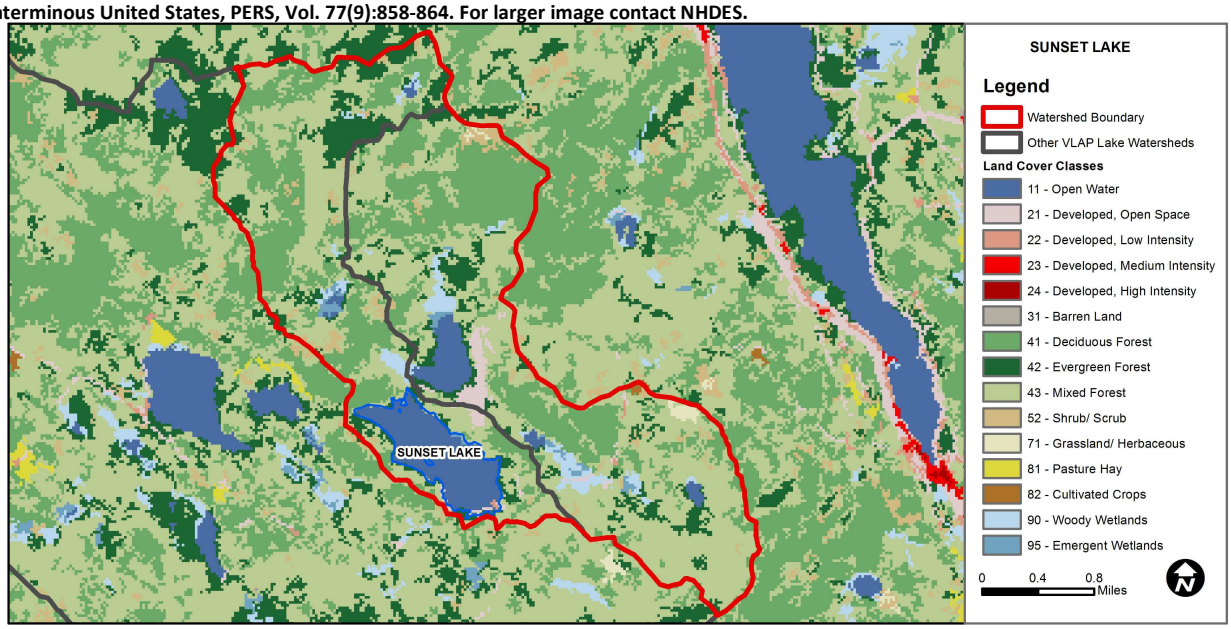
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Cautionary	< 10 samples and 1 exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

SUNSET LAKE HIDDEN VALLEY BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	7.75	Barren Land	0	Grassland/Herbaceous	0.44
Developed-Open Space	1.65	Deciduous Forest	29.3	Pasture Hay	0
Developed-Low Intensity	0.09	Evergreen Forest	10.93	Cultivated Crops	0.07
Developed-Medium Intensity	0	Mixed Forest	44.02	Woody Wetlands	2.57
Developed-High Intensity	0	Shrub-Scrub	2.48	Emergent Wetlands	0.72

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
SUNSET LAKE, ALTON, NH
2013 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were low in July and increased slightly in August. Average chlorophyll levels were slightly greater than 2012 but less than the state median. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- **CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity levels were low and much less than the state median. Historical trend analysis indicates stable epilimnetic conductivity with low variability between years.
- **E. COLI:** Beach E. coli levels were much less than the state standard for public beaches.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were very low and much less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with high variability between years. Inlet and Outlet phosphorus levels were slightly higher in July potentially due to the accumulation of nutrients from significant storm events.
- **TRANSPARENCY:** Transparency improved from July to August and was greater than the state median. Transparency measured with the viewscope was much better than without and may be a better representation of actual conditions. However, historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began.
- **TURBIDITY:** Beach 4 and Outlet turbidity were slightly elevated in July potentially due to accumulated suspended sediments from significant early summer storm events.
- **PH:** Deep spot pH levels were less than desirable range of 6.5 – 8.0 units. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH since monitoring began.
- **RECOMMENDED ACTIONS:** The increased frequency and intensity of storm events highlights the importance of managing stormwater runoff from lake and watershed properties, dirt/gravel roads and steep slopes. Encourage residents to implement simple stormwater management tactics outlined in DES' "Homeowner's Guide to Stormwater Management". Keep up the great work!

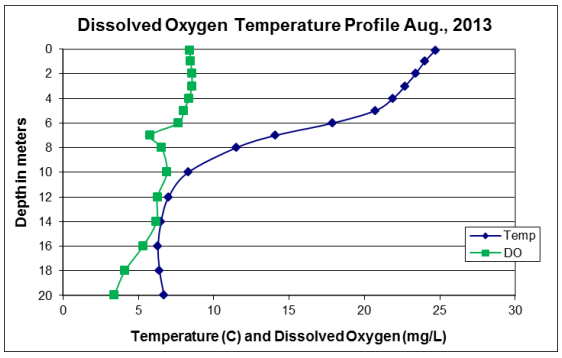


Table 1. 2013 Average Water Quality Data for SUNSET LAKE

Station	Alk. mg/l	Chlor-a ug/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Beach 4			27.6	2	10			1.39	6.48
Epilimnion	3.50	4.24	26.0		7	5.11	6.40	0.60	6.29
Metalimnion			27.7		9			0.69	6.10
Hypolimnion			26.1		5			0.48	6.01
Inlet			25.1		9			0.49	6.36
Outlet			25.3		10			0.63	6.66

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Degrading	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Stable	Trend not significant; data show low variability.	Transparency	Degrading	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.